**Objective:** Explain what happens to incoming solar radiation. Predict how changes to the energy budget system would affect the Earth system as a whole.

**Directions:**

1. Re-read pgs. 486-487 in the Pearson Earth Science textbook. Pay close attention to Fig. 12 on page 486.
2. Next, navigate to the following web page <http://earthguide.ucsd.edu/earthguide/diagrams/energybalance/> and read/click through the animation. Take notes on the specific energy budget values and system components.
3. Next, type the Key Words, “Earth’s Energy Budget” into a Google Image search. Examine several images that are found in the search and compare them with each other and to Fig. 12.
4. After comparing several images, **create your own energy budget diagram** on a FULL PAGE IN YOUR NOTEBOOK or on a separate sheet of paper if you do not have you notebook. You do not have to “reinvent the wheel”, but you may wish to combine information from a few of the images and Fig. 12. Different diagrams are better at communicating different concepts – your goal is to create an energy budget diagram you can understand well. Add color and make your diagram **neat and orderly**. Make sure the individual energy budget values agree generally with the values in Fig. 12 – they do not have to be exactly the same (different opinions within the scientific community).
5. Answer the questions below IN YOUR NOTEBOOK or on the back of the paper you made you illustration on.

**Questions:**

1. Major greenhouse gases include CO2, Water Vapor, and CH4 (Methane). Explain how these gases affect Earth’s energy budget.
2. If greenhouse gases were to drop to extremely low levels, what affect would this have on the entire Earth system? In other words, what would Earth be like?
3. Research the average percentage of cloud coverage over the entire surface of the Earth – what is the percentage? What role do clouds play in the energy budget?

1. How would the Earth system be affected if the cloud coverage percentage dropped to 0%? How would the Earth system be affected if the cloud coverage percentage increased to 100%?
2. What other changes to energy budget system components would result in an overall warming trend for the Earth system? For example, less surface snow/ice cover would result in less reflection of solar radiation, likely resulting in warming trend.
3. What other changes to energy budget system components would result in an overall cooling trend for the Earth system? For example, more surface snow/ice cover would increase reflection of solar radiation likely resulting in global cooling.